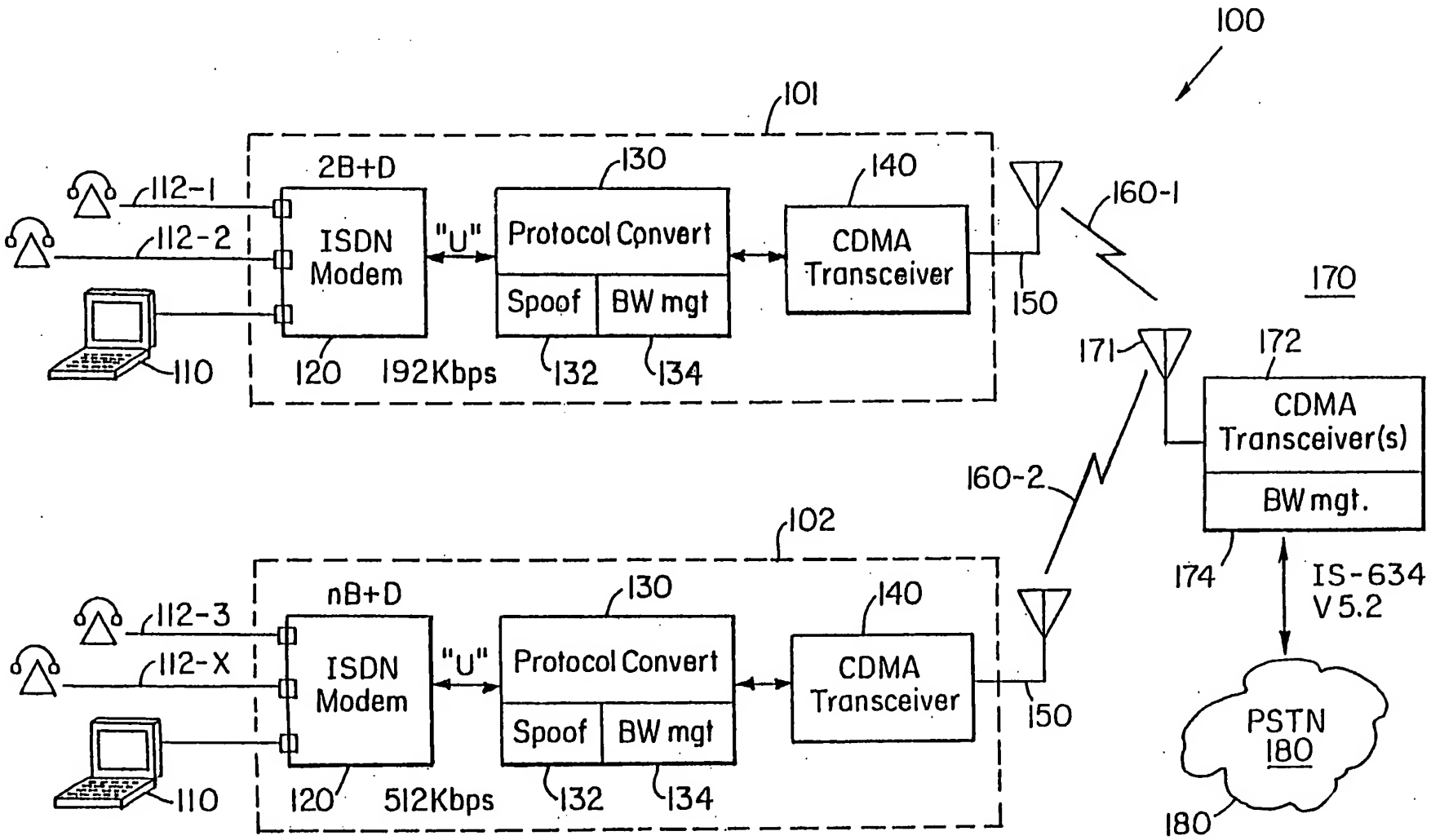
100
101
2B+D
130
140
112-1
112-2
ISDN Modem
"U"
Protocol Convert
CDMA Transceiver
160-1
150
Spoof
BW mgt
110
120
192Kbps
132
134
170
171
172
CDMA Transceiver(s)
BW mgt.
160-2
102
nB+D
130
140
112-3
112-X
ISDN Modem
"U"
Protocol Convert
CDMA Transceiver
150
Spoof
BW mgt
110
120
512Kbps
132
134
174
IS-634 V5.2
PSTN 180
180

FIG. 1

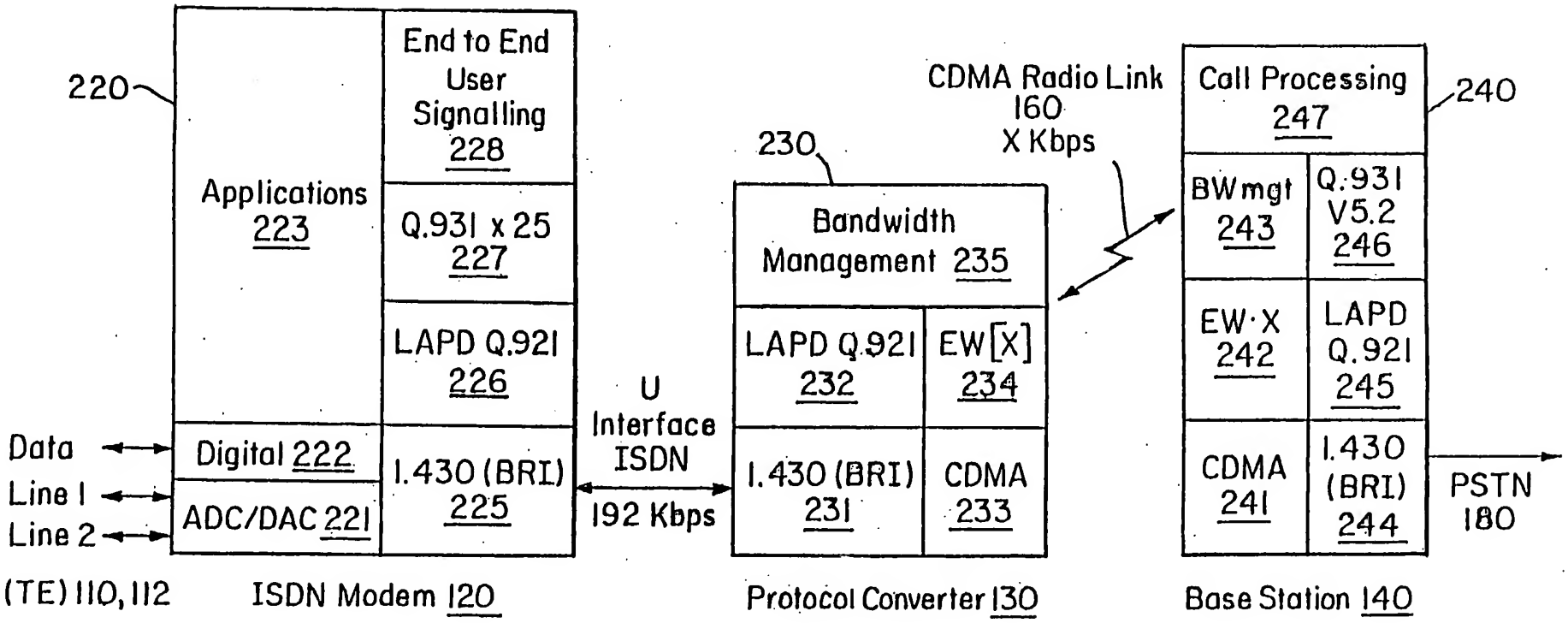
220
Applications 223
End to End User Signalling 228
Q.931 x 25 227
LAPD Q.921 226
Digital 222
ADC/DAC 221
I.430 (BRI) 225
Data
Line 1
Line 2
(TE) 110, 112
ISDN Modem 120
U Interface ISDN
192 Kbps
230
Bandwidth Management 235
LAPD Q.921 232
EW[X] 234
I.430 (BRI) 231
CDMA 233
Protocol Converter 130
CDMA Radio Link 160
X Kbps
240
Call Processing 247
BW mgt 243
Q.931 V5.2 246
EW-X 242
LAPD Q.921 245
CDMA 241
I.430 (BRI) 244
PSTN 180
Base Station 140

FIG. 2

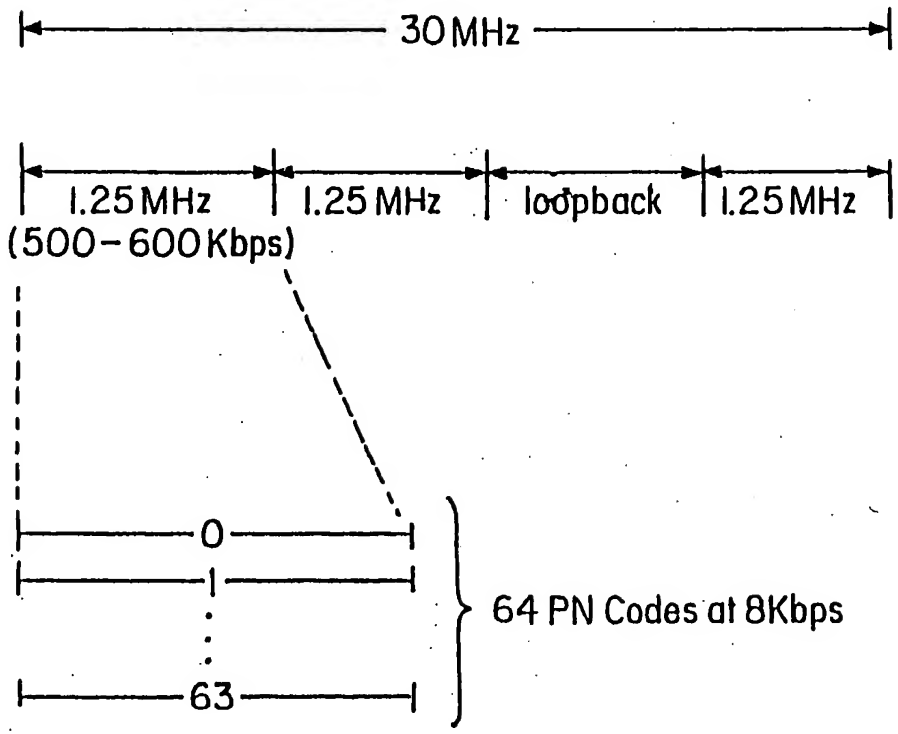
30 MHz
1.25 MHz
1.25 MHz
loopback
1.25 MHz
(500-600 Kbps)
0
63
64 PN Codes at 8Kbps

FIG. 3

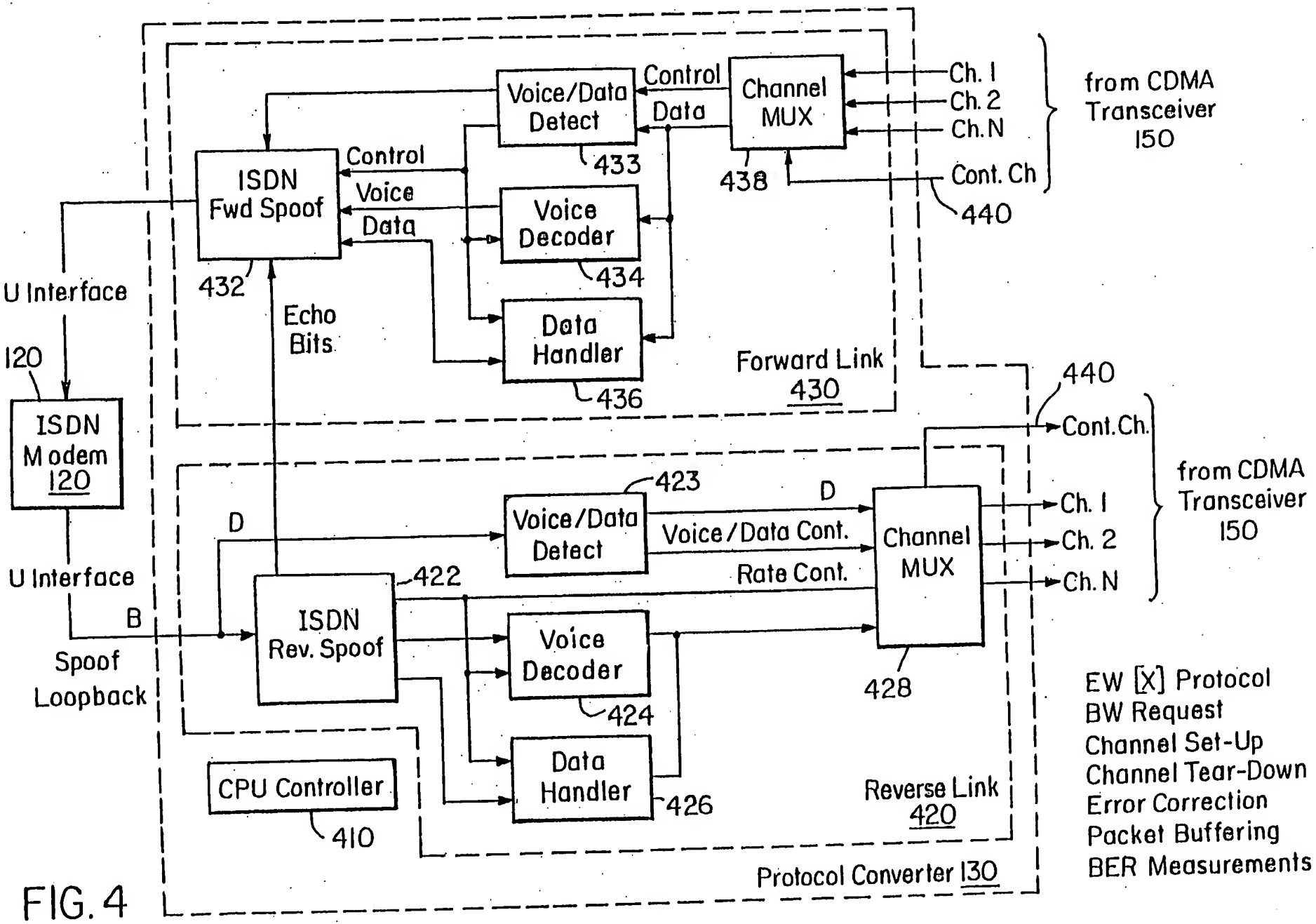
Voice/Data Detect
Control
Data
Channel MUX
Ch. 1
Ch. 2
Ch. N
Cont. Ch
from CDMA Transceiver 150
433
438
440
ISDN Fwd Spoof
Control
Voice
Data
Voice Decoder
434
Data Handler
436
432
Echo Bits
U Interface
120
ISDN Modem 120
Forward Link 430
440
Cont. Ch.
423
D
Voice/Data Detect
Voice/Data Cont.
Rate Cont.
Channel MUX
Ch. 1
Ch. 2
Ch. N
from CDMA Transceiver 150
U Interface
B
422
ISDN Rev. Spoof
Voice Decoder
424
Data Handler
426
428
Spoof Loopback
CPU Controller
410
Reverse Link 420
Protocol Converter 130
EW [X] Protocol
BW Request
Channel Set-Up
Channel Tear-Down
Error Correction
Packet Buffering
BER Measurements

FIG. 4

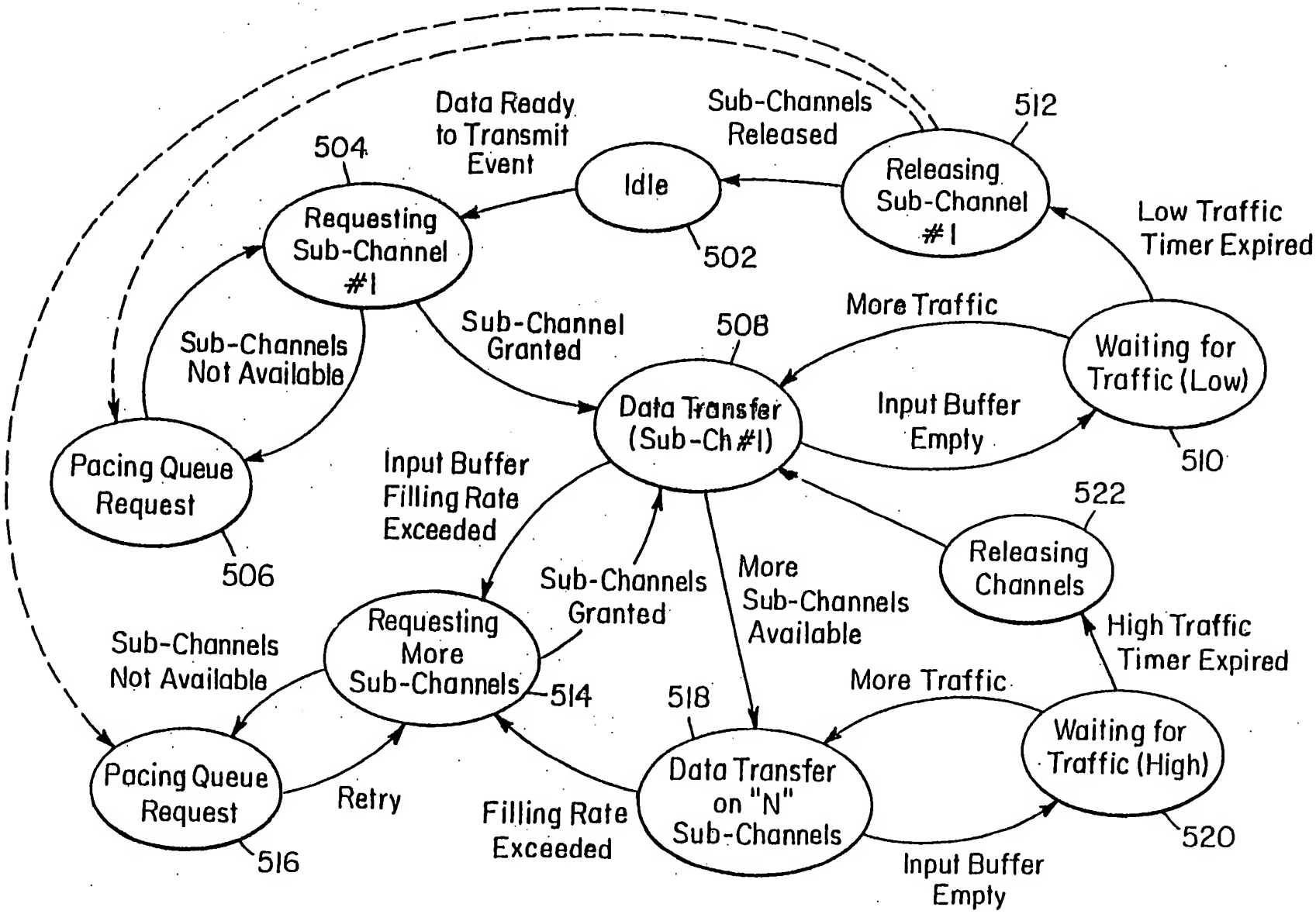
Data Ready
to Transmit
Event
Sub-Channels
Released
512
504
Idle
Releasing
Sub-Channel
#1
Low Traffic
Timer Expired
Requesting
Sub-Channel
#1
502
More Traffic
Sub-Channel
Granted
508
Waiting for
Traffic (Low)
Sub-Channels
Not Available
Data Transfer
(Sub-Ch#1)
Input Buffer
Empty
Pacing Queue
Request
Input Buffer
Filling Rate
Exceeded
510
522
Releasing
Channels
506
Sub-Channels
Granted
More
Sub-Channels
Available
Requesting
More
Sub-Channels
High Traffic
Timer Expired
Sub-Channels
Not Available
514
518
More Traffic
Waiting for
Traffic (High)
Pacing Queue
Request
Retry
Data Transfer
on "N"
Sub-Channels
Filling Rate
Exceeded
520
516
Input Buffer
Empty

FIG. 5

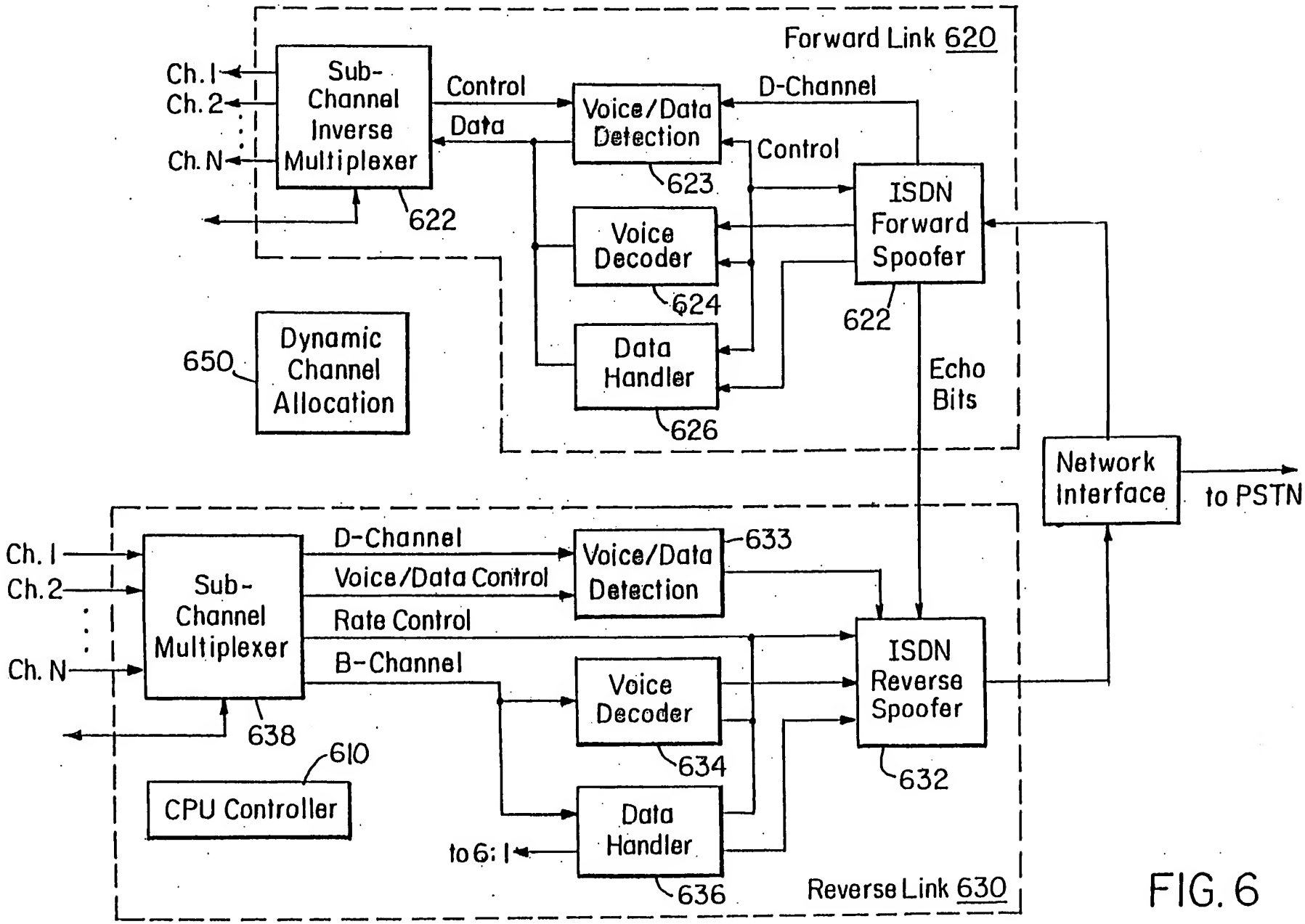
Forward Link 620
Ch. 1
Ch. 2
Ch. N
Sub-Channel Inverse Multiplexer
622
Control
Data
Voice/Data Detection
623
D-Channel
Control
Voice Decoder
624
Data Handler
626
ISDN Forward Spoofer
622
650
Dynamic Channel Allocation
Echo Bits
Network Interface
to PSTN
Ch. 1
Ch. 2
Ch. N
Sub-Channel Multiplexer
638
D-Channel
Voice/Data Control
Rate Control
B-Channel
Voice/Data Detection
633
Voice Decoder
634
Data Handler
636
ISDN Reverse Spoofer
632
610
CPU Controller
to 6:1
Reverse Link 630

FIG. 6

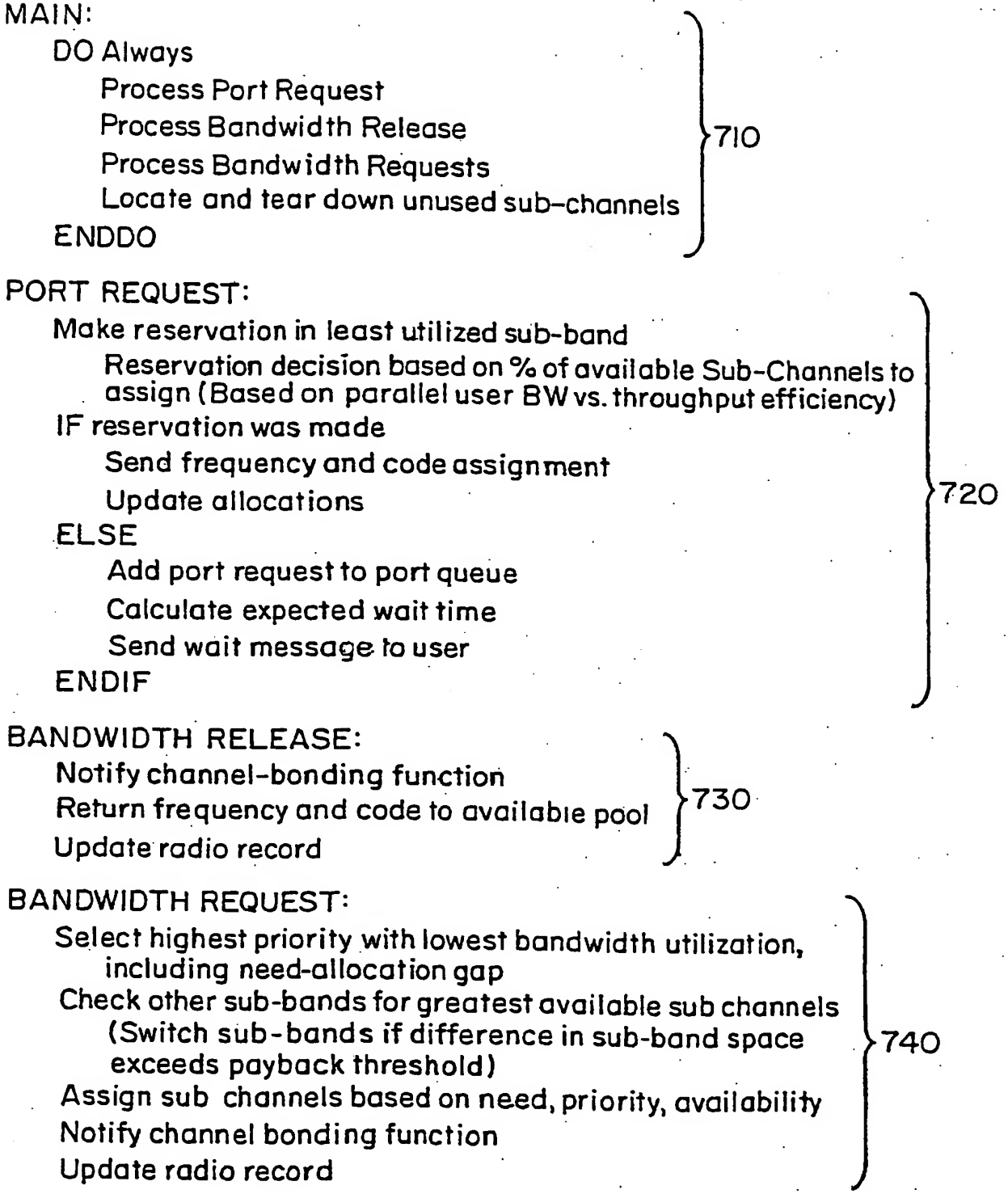
MAIN:
DO Always
Process Port Request
Process Bandwidth Release
Process Bandwidth Requests
Locate and tear down unused sub-channels
ENDDO
710
PORT REQUEST:
Make reservation in least utilized sub-band
Reservation decision based on % of available Sub-Channels to assign (Based on parallel user BW vs. throughput efficiency)
IF reservation was made
Send frequency and code assignment
Update allocations
ELSE
Add port request to port queue
Calculate expected wait time
Send wait message to user
ENDIF
720
BANDWIDTH RELEASE:
Notify channel-bonding function
Return frequency and code to available pool
Update radio record
730
BANDWIDTH REQUEST:
Select highest priority with lowest bandwidth utilization, including need-allocation gap
Check other sub-bands for greatest available sub channels (Switch sub-bands if difference in sub-band space exceeds payback threshold)
Assign sub channels based on need, priority, availability
Notify channel bonding function
Update radio record
740

FIG. 7